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might be established for each species. and it would be possible to estimate with some degree of accuracy the age of a tree from its diameter. From this standpoint LIGNIER has investigated *Quercus pedunculata*, *Castanea vulgaris*, *Sophora japonica*, and *Taxus baccata*; and in a less complete way *Sequoia gigantea*, *Cedrus Deodora*, and *Araucaria imbricata*. There are three distinct periods in the rate of diameter increase: (1) the period of acceleration; (2) the period of decline; (3) the final period in which diameter increase is barely perceptible. *Quercus* begins its final period at about 140 years, when the radius is 57.9 cm; *Castanea* at 190 years, with a radius of 74.7 cm; *Taxus* at 150 years, with a radius of 25.6 cm. For each of the species investigated there is a table which gives the age in terms of the radius.—J. M. C.

**Cytology of the Entomophthoraceae.**—The preliminary announcement of RIDDLE's results was noted in this journal.<sup>19</sup> The full paper has now appeared,<sup>20</sup> *Empusa Grylli* and several species of Entomophthora were investigated, and the writer reaches conclusions somewhat different from those of OLIVE.<sup>21</sup> The nucleus is well developed, there being a chromatin nucleolus surrounded by chromatin granules. At division there is a well-developed mitosis, in which, however, the chromosomes are formed by a direct aggregation of chromatin granules without the formation of a spirem. The spindle is intranuclear, bipolar, and without centrosomes. The conidia of *Empusa* are multinucleate and those of Entomophthora uninucleate. The zygospores of Entomophthora are formed by the fusion of multinucleate hyphal bodies. In *Empusa* the zygospores are formed by the budding out of a hyphal body. Cytological evidence favors the derivation of the Entomophthoraceae from a Mucor-like ancestry.—CHARLES J. CHAMBERLAIN.

**Parthenogenesis in Wikstroemia.**—WINKLER's preliminary paper was reviewed in this journal,<sup>22</sup> and now the completed results have been published.<sup>23</sup> The present investigation shows that the embryo develops from the egg without fertilization, but whether the egg contains the sporophyte number of chromosomes (52) or the gametophyte number (26) was not determined definitely. It is probable that the egg has the sporophyte number of chromosomes. WINKLER proposes the phrase *somatic parthenogenesis* for cases in which the embryo develops from an egg with the sporophyte number of chromosomes, and *generative parthenogenesis* for cases in which the number has been reduced. He insists that an egg is an egg whether it has the reduced number of chromosomes or not. The

<sup>19</sup> BOT. GAZETTE 42:236. 1906.

<sup>20</sup> RIDDLE, LINCOLN, W., On the cytology of the Entomophthoraceae. Proc. Amer. Acad. 42:177-197. pls. 1-3. 1906.

<sup>21</sup> BOT. GAZETTE 41:192-205, 229-259. 1906.

<sup>22</sup> BOT. GAZETTE 39:236. 1905.

<sup>23</sup> WINKLER, HANS, Ueber Parthenogenesis bei *Wikstroemia indica*. Ann. Jard. Buitenzorg II. 5:208-276. pls. 20-23. 1906.